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CURRENT SUPPORT BRIEF

STRUMILIN'S NET INDEX OF OUTPUT

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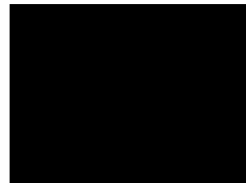
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STRUMILIN'S NET INDEX OF OUTPUT

The past three weeks have witnessed an increasing Western commentary on the purported "downgrading" of the official Soviet industrial production index by no less a personage than Academician Strumilin, dean of the Soviet economists. Some Western readers of his year-old book, Essays on the Socialist Economy of the USSR, 1/ have interpreted a section as confirmation by Strumilin that official Soviet figures on industrial growth are "purposely" exaggerated. 2/ This interpretation of Strumilin's work has been made by such Western scholars as Harry Schwartz and Francis Seton. The question is thus raised--did Strumilin make such an attack on the official index and, if not, why has he been so interpreted? This memorandum is an analysis of Strumilin's work and his intent in terms of the context of the article.

Strumilin is not concerned with constructing a net industrial production index as a substitute for the official gross industrial production index but with refuting the suggestion of another author, one E. F. Chukhanov, 3/ that the over-all increase in annual output is a proper measure of "the effectiveness of new technology."* Strumilin offers a substitute methodology which is intended to provide a measure --deflated for the effects of manpower changes and for changes in the cost structure of industry. Statistical data illustrating his methodology are included in the article. Neither the textual description of the methodology nor the statistical data are comprehensive enough to allow a full reconstruction of his procedures. A careful analysis, however, permits a basic understanding of his method. Some inconsistencies and unknowns remain but they do not appear to affect our evaluation.

Strumilin's reputation as an economist rests principally upon his role as the leading interpreter and adapter of Marxist economic theory. His interests are largely ideological and theoretical. He resorts to statistical calculations only to provide support to his theoretical judgments, and usually is not inhibited by considerations of consistency and precision. His method of calculation of a "net" output index illustrates his rather cavalier statistical standards.

By combining wages and profits** into an index Strumilin constructs what he terms a "net output index." In concept, Strumilin's "net output index," by eliminating the effect of "double counting" of materials, fuels and energy inputs, closely approaches the Western concept of an index of value added in industry. The major discrepancy comes in Strumilin's adherence to the doctrine of Marx and his consequent leaving out of his index rent, interest, and depreciation. Strumilin assumes that the movement of the wage bill and profits** approximate the movement of an index of value-added in constant prices.

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* The efficiency of investment in Western terminology, i.e., an incremental capital-output ratio.
** In Marxist terminology this would be "surplus value," that is, it includes the turnover tax on final products.
1/S. G. Strumilin, Ockerki Sotsialisticheskoi Ekonomiki SSSR (Essays on the Socialist Economy of the USSR), Moscow 1959, p. 233-242.
2/Schwartz, New York Times, 11 September 1960, p. 8.
   Wall Street Journal, 13 September 1960.
   Time, 26 September 1960, p. 32.
   The Times, London, 12 September 1960, p. 11.
   Life, 26 September 1960, p. 39.
3/E. F. Chukhanov, Gostekhnika, "On the Effectivenss of New Technology," January 1957.

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Ideally an index of value-added in constant prices would be constructed by subtracting from the value of gross industrial output the value of purchases of materials, fuels and energy, all in constant prices. Economists, lacking such data, have long despaired of such an operation. Strumilin, however, did not feel as constrained as his Western counterparts. Blessed with official data showing the breakdown of the costs of production in current prices, and the value of gross output in constant (1926/27) prices and armed with an assumption regarding the relationship between the wage bill and profts, Strumilin forged his "index of net output."

In his description Strumilin implies he assumed that the relationship between profits (surplus value) and the share of wages in cost is constant. For 1955 he computes profits (surplus value) as being 75 percent of the wage bill. It is not possible to reconcile this relationship and the implied assumption with the data presented in the article.

Unfortunately, Strumilin does not include in his article enough information to completely reconstruct his procedure, but some rather interesting points are revealed which should invite the skepticism of Western scholars. For example, Strumilin computes "net output" to be 44.8 percent of gross in 1932, and 30.6 percent in 1955. By merely taking the straight-line change in this relationship from 1932-1955 and using Strumilin's data for the value of gross production, it is possible, with the exception of 1940, to derive his "net output" series.

Strumilin's index shows a rate of growth significantly below that of the official gross industrial production index. However, it still leaves a strikingly high industrial growth rate. A number of industrial production indexes, constructed in various ways, are shown below.*

	Official Soviet Gross Index	Strumilin's "Net" Index	Kaplan-Moorsteen Index	Seton Index	CIA our Index
1928	100	100	100	100	--
1932	202	192	154	--	--
1937	446	394	249	371	--
1940	646	686	253	450	--
1945	593	464	135	--	--
1950	1,119 (100)	803 (100)	370 (100)	714 (100)	100
1955	2,069 (185)	1,348 (168)	585 (158)	1,178 (165)	167
1956	2,290 (205)	1,462 (182)	634 (172)	--	184

Even though Mr. Strumilin's index fortuitously differs only slightly in results (for the 1950-1956 period) from the Western indexes shown above, it should be clearly noted that the conceptual differences in these indexes preclude any meaningful comparison of his index with Western estimates of Soviet industrial growth or with conceptually equating it to the FRB index of US industrial growth.

Far from attacking the official index of production Strumilin clearly accepts the official figures in the same article as being appropriate for the measurement of the growth of Soviet industrial output, his point being not that the "double-counting" bias in the

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* The Kaplan-Moorsteen index is constructed from physical output series weighted by the wage-bill distribution. It is therefore intended to approximate a value-added weighted measure similar in nature and methodology to the our CIA index but smaller in coverage. The our CIA index follows the pattern of the Federal Reserve Board index of US industrial production. The Seton index is an index of primary material inputs adjusted for the relationship between these inputs and industrial growth as displayed in several Western economies.

25X1C

29 September 1960   CIA/RR CB-60-50 ███████   Page 4

official index overstates growth, but rather, that the official index because of double-counting, "cannot serve as a measure of the effectiveness of investment in new technology." It can also be pointed out that there seems to exist, although it has never been published and therefore probably not available to Mr. Strumilin and certainly not to the West, an official net output index. In all probability the official net output index, because of the nature of the data usually collected by the Central Statistical Administration on the costs of production and the value of output, is conceptually acceptable except for the limitations imposed by Marxist economic theory.

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29 September 1960   CIA/RR CB-60-50   Page 5

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